Resonant inelastic scattering study of insulating cuprates at the Cu L-edges

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We have performed some initial measurements of resonant inelastic scattering spectra for three parent cuprates (La2CuO4 , Sr2CuO2Cl2 and Ca2CuO2Cl2) at the Cu L2 & L3 edges. They all show similar features - a very strong excitation band of dd type around 2 eV and a charge-transfer excitation feature around 5 eV. L-edge spectra have larger intensity at the dd channel compared to the Cu K-edge results we have from Brookhaven [1,2]. Such resonant profile measurements are important to characterize the dd excitations channels (optically forbidden) in these compounds as they are relevant for antiferromagnetic and superconducting properties which arise when these insulators are doped with different concentrations. More detailed study is underway.

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